What Is Claimed Is:

1. An autonomous self-propelled cleaning device comprising: a moving means for moving the cleaning device; a control means for controlling the moving means; an orientation angle detection means for detecting the orientation angle of the cleaning device; and a wall surface detection means which is capable of detecting a wall surface in a position at one side of the cleaning device, and the control means determines a rectangular travel paths based on an orientation angle detected by the orientation angle detection means when the control means causes the cleaning device to travel alongside the wall surface which partitions the room to be cleaned and which is detected by the wall surface detection means, and the driving means drives the cleaning device such that it moves along this travel path.

2. A self-propelled cleaning device described in Claim 1, comprising an obstacle detection means for detecting an obstacle at a position in front of the cleaning device, and if the obstacle detection means detects an obstacle on the travel path, the control means controls the moving means such that the obstacle is avoided.

3. A self-propelled cleaning device described in Claim 2, wherein the control means controls the moving means such that if the obstacle detection means detects an obstacle in the advance direction of the cleaning device, the cleaning device moves alongside the right-side or

left-side of the obstacle such that the obstacle is avoided.

4. A self-propelled cleaning device described in Claim 1, comprising a map recording means capable of storing information on the region for cleaning, in which the control means determines a rectangular travel path based on the information recorded in the map recording means.

5. A method for operating a self-propelled cleaning device capable of autonomous movement, comprising the steps of: causing the cleaning device to travel along a plurality of looped travel paths including travel routes along a pair of opposing wall surfaces; detecting a reference direction for the self-propelled cleaning device on at least one of the travel routes along the wall surface; and determining a travel path other than the travel routes along the wall surface based on the reference direction.

6. A method of operation for a self-propelled cleaning device comprising a moving means for moving on the floor surface; a control means for controlling the moving means; and a cleaning means for cleaning the floor surface, wherein said method of operation comprises the steps of: finding the wall surface prior to the start cleaning using one of right-side tracking and left-side tracking alongside the wall surface; and cleaning, when the wall surface is found, based on information detected by an orientation angle detection means for detecting the orientation angle of the cleaning device, and a wall surface detection means for detecting the position of the wall surface, and which takes a plurality of

spiral travel paths which partially overlap with each other.

7. A method for operating a self-propelled cleaning device described in Claim 6, wherein the spiral travel path comprises: a first horizontal movement path alongside a first wall surface segment of the wall surface; a first vertical movement path that is continuous with the first horizontal path; a second horizontal movement path that is continuous with first vertical movement path alongside the second wall surface segment opposing the first wall surface segment and; a second vertical movement path that is continuous with the second horizontal movement path.

8. A method for operating a self-propelled cleaning device described in Claim 6, wherein when the cleaning device travels on at least the first or second horizontal movement path, the orientation angle detection means detects the orientation angle, and sets the direction of the first and second vertical movement path based on the detected orientation angle.

9. A method for operating a self-propelled cleaning device described in Claim 8, wherein the orientation angle is continually corrected using the orientation angle detected by the orientation angle detection means when the cleaning device is caused to travel on the first horizontal movement path and the orientation angle of the first wall surface segment stored in the map recording means that stores wall surface information.

10. A method for operating a self-propelled cleaning device

described in Claim 9, wherein the cleaning device tracks around the wall surface before cleaning begins, and wall surface information is stored in the map recording means based on the wall surface information detected at the time of tracking.

11. A method for operating a self-propelled cleaning device described in Claim 5, wherein the looped travel path comprises a first vertical movement path that is substantially orthogonal with respect to the travel route along the wall surface, and a second vertical movement path, and the interval between these two movement paths is an odd-number multiple of half of the interval between the two adjacent looped travel paths.

12. A method for operating a self-propelled cleaning device described in Claim 5, wherein the interval between the two adjacent looped travel paths is between 1 and 2 times the width cleanable by the cleaning means.

13. A method for operating a self-propelled cleaning device which uses an orientation angle detection means and a wall surface detection means which detects wall surface to clean regions enclosed by a plurality of wall surface segments, said method comprising: a first step of moving the cleaning device until it approaches the obstacle or the wall surface segment; a second step of moving the cleaning device such that one of the right-side and left-side of the cleaning device approaches the object,

and then tracking the cleaning device around the object; and a third step of comparing the direction of the accumulative variation of the orientation direction detected by the orientation direction detection means with the direction of the side of cleaning device approaching the object in the second step, selecting the result of comparison to be equality when the first direction is clockwise and the second direction is right-side , or the first direction is counterclockwise and the second direction is left-side, and a fourth step of rotating the cleaning device by a prescribed angle and repeating the process from the first step when the result of comparison in the third step is equality.

14. An autonomous self-propelled cleaning device having a main body, a movement means for moving the main body on a floor surface, a control means for operating the movement means and for controlling the movement of the main body, a cleaning means provided on the main body and for cleaning the floor surface, an orientation angle detection means for detecting an orientation angle of the main body, and a wall surface detection means for detecting a relative position of the wall surface to the main body, and a region enclosed by a plurality of wall surface segments is cleaned; the autonomous self-propelled cleaning device wherein, the control means comprises wall surface search means which has a first step of moving the main body until it approaches an obstacle, a second step of moving the main body such that the main body approaches to the obstacle in a prescribed side direction to an advance direction of the main body and tracking the main body around the obstacle, a third step of

comparing the direction of accumulative variation of the main body detected by the orientation angle detection means in the tracking-around movement with the prescribed direction, and a fourth step of rotating the main body by a prescribed angle and repeating the process from the first step when the result of comparison in the third step is equality.